



ABOUT WELLS AND WATER

These notes have been prepared to help in understanding the occurrence of ground water and to assist in developing a well water supply. Additional information can be obtained by contacting your Ministry of the Environment regional Ground Water Evaluator.

Licensing and Reporting

All persons carrying on the business of constructing water wells are required by law to hold a license from the Ministry of the Environment. A list of licensed contractors is available on request.

All licensed contractors are required by law to complete a report on the completion of construction of a well and to supply one copy to the owner of the well within two weeks and one copy to the Ministry of the Environment one month after completion.

A Written Contract Protects You

The development of a well supply is an undertaking in which results cannot be guaranteed. In some cases it requires considerable exploratory work. A well-executed written contract prevents misunderstanding between you and your contractor, and is recommended.

A written contract should state quite clearly the responsibilities and obligations of yourself and the contractor, limits of expenditure if any, and the extent of the contractor's undertaking.

Protect and Test Your Water Supply

- a) Dug and bored wells must be properly cased and the annular space between the casing and the hole sealed to prevent surface runoff entering the well. The tops of dug or bored wells should be at least six inches above finished grade level which must slope away from the well. A polluted well is no good to you. It is an offence under the Ontario Water Resources Act to allow or cause pollution to enter a well.
- b) Your contractor reports on the quality of water in general terms. If the chemical quality is suspect, detailed analysis should be undertaken at a commercial laboratory since high concentrations of certain substances may be harmful to health, stock, crops or your water system.
- c) Your local health unit will carry out bacteriological tests on your water supply and will advise you on the need for repeated tests.

Some Terms in Common Usage

Water table — is the level at which water is encountered in a free, unconfined, or water-table aquifer. This is the top of the zone of saturation. A well obtaining water from this aquifer is a water-table well (e.g. well "A").*



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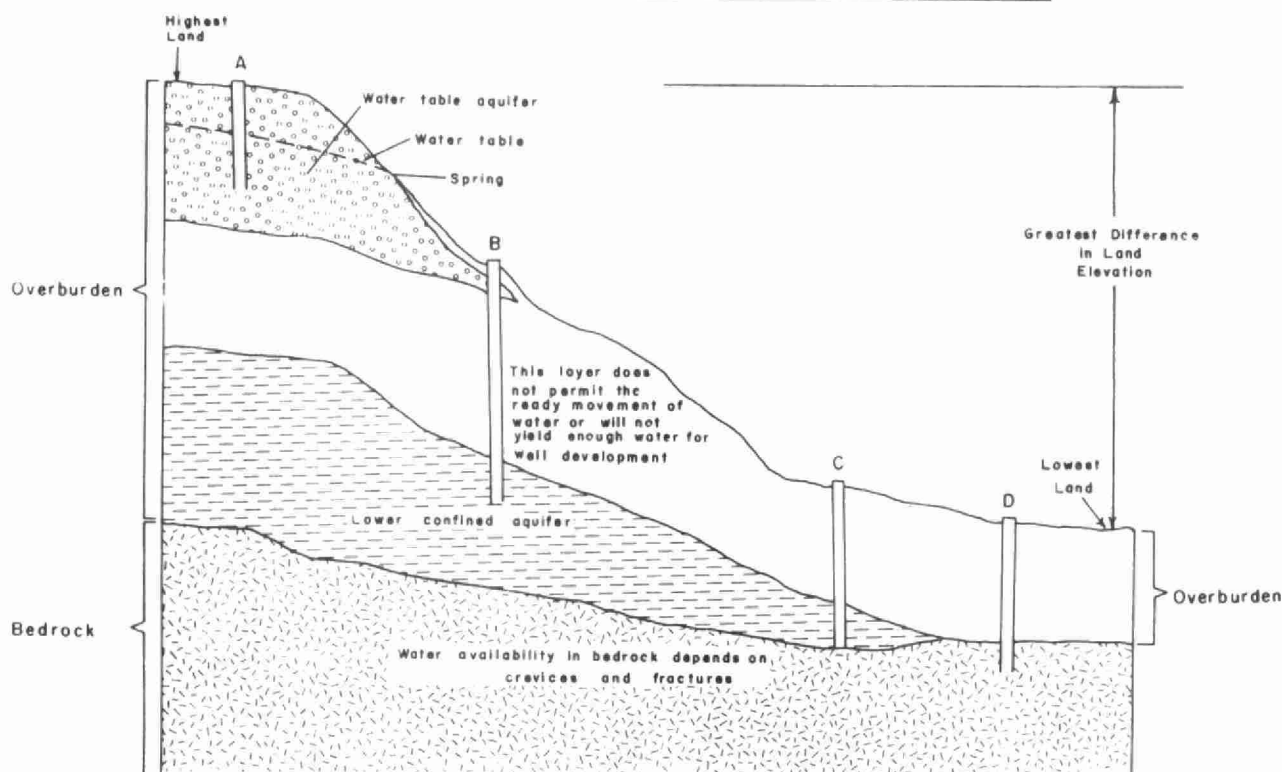
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Artesian well — is a well obtaining water from a confined or artesian aquifer. The static level of an artesian well is much above the level at which water was encountered; it may even be above ground level. In the latter case, the well will be a flowing artesian well. Wells "B" and "C" are artesian wells and well "C" will be flowing while well "B" may or may not flow depending on the hydrostatic pressure.

Static level — is the level at which water stands when the well is not in use; in the case of a water-table well the static level is the water table; in an artesian well the static level is sometimes called the piezometric or potentiometric surface.

Well Screen — this is a pipe with perforations or openings which act as a strainer; it is placed in fine-grained formations and permits

A SIMPLE REPRESENTATION OF GROUNDWATER OCCURRENCE



NOTES:

- 1) All material above the bedrock is called overburden. In the above diagram the overburden is deep on the left hand side and shallow on the right.
- 2) The word aquifer is the name given to any material that has spaces, openings or cracks in which water collects and moves with relative ease. Aquifers may occur in the overburden or in the bedrock. Loosely packed gravel is a good aquifer, fine sand is a poor aquifer, fractured rock may be good or poor.
- 3) The illustration shows two overburden aquifers. Both do not occur throughout the entire area. This is typical of the discontinuous nature of overburden aquifers.
- 4) Well "A" taps the shallow overburden aquifer. Well "B" taps the lower overburden aquifer. Well "C" taps the same lower aquifer as well "B"; its depth however is much less because of the difference in land elevation at locations "B" and "C". Well "D" goes into bedrock. There is no overburden aquifer at this location.
- 5) The diagram is for illustrative purposes only; the conditions on your property are likely to be different. The diagram is an over-simplification. Its purpose is to show:
 - a) That nearby wells may obtain water from aquifers which are at different depths below ground as in the case of wells "A" and "B". Perhaps well "B" did not stop at the upper aquifer because of insufficient water supply from this aquifer at this location.
 - b) That wells going to the same aquifer may involve different amounts of drilling as in the case of wells "B" and "C".
 - c) That overburden aquifers may be entirely missing and wells may have to go into the bedrock as in the case of well "D".
 - d) Well "C" went to the overburden/bedrock interface. Sometimes a better supply is obtained by drilling to the interface or a few feet into the rock instead of stopping when water is reached in an overburden aquifer.

water to move into the well while keeping out the fine-grained materials which would normally plug and render a well useless.

Adequate Well Development Pays

It pays to develop a well adequately at the time of construction.

Adequate well development means making the best use of the conditions encountered, it should be undertaken at the time of construction by paying attention to the following points:

- a) Penetrate shallow aquifers for their full thicknesses or for several feet below the water level. This ensures a more dependable supply especially in those cases where the water-table fluctuates greatly. The deepening of a well at a later stage should be avoided as it is costly and disruptive to use.
- b) If the aquifer consists of fine material, suitable screens should be installed at the time of construction. Screens improve the flow

into wells, increase well capacities and prolong the life of wells. The size and type of screen must be carefully selected. Ask your licensed contractor for technical advice in these matters. Proper development at the time of construction pays. It prevents the blocking of wells and costly rehabilitation at a later date.

- c) A properly run pumping test for a reasonable length of time will help to determine the yield of your well and the most suitable position for setting your pump. It is not wise to depend upon an inadequate test or guesswork for your pump setting and your well capacity. Advice regarding test pumping is available from your regional Ground Water Evaluator.
- d) Pump installation in your well is another very important part of your water supply. You should contact a competent pump installer, who will ensure that the pump is suited to your well capacity and also that the installation complies with our regulation and will pass our inspection. The wrong size pump or a poor job of installation may ruin your well.

Contact your Regional Ground Water Evaluator for advice at the following addresses:

Northwestern Region

435 James Street South
Thunder Bay, P7E 6E3
475-1215

Northeastern Region

Lockerby Plaza
256 Caswell Drive
Sudbury, P3E 2K8
522-8282

Southwestern Region

985 Adelaide Street South
London, N6E 1V3
681-3600

West Central Region

140 Centennial Parkway North
Stoney Creek, L8E 3H2
561-7410

Central Region

150 Ferrand Drive
Don Mills, M3C 3C3
424-3000

Southeastern Region

133 Dalton Street
Kingston, K7K 4G5
549-4000